

IN THE CLAIMS:

Please cancel claims 2 and 14 without prejudice or disclaimer and amend claims 1, 4, 5, 8-13, 15-18 and 24-27 as follows.

1. (Currently Amended) A method comprising:

receiving, in ~~at least one~~a second computer node of a computer ~~cluster~~network, periodic heartbeat messages from a first computer node of the computer ~~cluster~~network, each of the ~~at least one~~ second computer node including at least one resource for performing at least one ~~cluster~~network-specific task;

transmitting heartbeat ~~acknowledgment~~acknowledgement messages from the ~~at least one~~ second computer node to the first computer node as responses to the heartbeat messages, wherein each heartbeat acknowledgement message indicates to indicate to the first computer node that the at least one second computer node is operative within the computer ~~cluster~~network and wherein the heartbeat acknowledgement messages form a sequence of heartbeat acknowledgement messages transmitted from the second computer node to the first computer node;

~~receiving, in at least one of the second computer nodes, state information for any one or more of the heartbeat acknowledgment messages, wherein the state information is indicative of an ability of the at least one resource to perform the at least one cluster-specific task; and~~

examining, in the second computer node, whether state information is to be retrieved

for a heartbeat acknowledgement message to be transmitted to the first computer node, the heartbeat acknowledgement message belonging to the sequence of heartbeat messages and the state information being indicative of current ability of the at least one resource to perform the at least one network-specific task;

retrieving the state information for the heartbeat acknowledgement message when the examining indicates that the state information is to be retrieved; and

sending the retrieved state information in ~~one or more of~~ the heartbeat ~~acknowledgment~~acknowledgement messages to the first computer node for storing the state information in the first computer node,

wherein the examining is performed for each heartbeat acknowledgement message to be transmitted to the first computer node, thereby transferring a sequence of the state information within the sequence of heartbeat acknowledgement messages.

2. (Cancelled)

3. (Previously Presented) The method according to claim 2, wherein the examining includes examining whether a predetermined condition is fulfilled.

4. (Currently Amended) The method according to claim 3, wherein
the retrieving ~~and sending the~~ state information and the sending of the retrieved state information are performed when the examining indicates that the predetermined condition is

fulfilled, and

the transmitting comprises transmitting a heartbeat ~~acknowledgment~~acknowledgement message without state information when the examining indicates that the predetermined condition fails to be fulfilled, wherein the heartbeat ~~acknowledgment~~acknowledgement message is any of the heartbeat acknowledgement messages.

5. (Currently Amended) The method according to claim 1, further comprising determining a type of state information to be retrieved for ~~the~~a heartbeat ~~acknowledgment~~acknowledgement message.

6. (Cancelled)

7. (Cancelled)

8. (Currently Amended) A computer ~~cluster~~network comprising:
a plurality of computer nodes;~~the computer cluster comprising;~~ and
a second computer node of the plurality of computer nodes comprising a transmitting
receiving unit configured to ~~transmit~~receive ~~periodica~~ heartbeat ~~message~~messages from a first computer node of the ~~computer cluster to a second computer node of the~~ plurality of computer ~~nodes~~cluster, the second computer node including at least one resource for

performing at least one ~~cluster~~network-specific task;

~~a receiving unit configured to receive the heartbeat message in the second computer node;~~

the second computer node further comprising a transmitting unit configured to transmit heartbeat acknowledgement messages to the first computer node as responses to the heartbeat messages, wherein each heartbeat acknowledgement message indicates to the first computer node that the second computer node is operative within the computer network and wherein the heartbeat acknowledgement messages form a sequence of heartbeat acknowledgement messages,

wherein the transmitting unit comprises an examining unit configured to examine whether state information is to be retrieved for a heartbeat acknowledgement message to be transmitted to the first computer node, wherein the heartbeat acknowledgement message belongs to the sequence of heartbeat acknowledgement messages and wherein the state information is indicative of current ability of the at least one resource to perform the at least one network-specific task,

wherein the transmitting unit further comprises a ~~retrieving unit~~retrieving unit configured to retrieve, upon indication by the examining unit, the state information for ~~thea~~ heartbeat ~~acknowledgment~~acknowledgement message to be sent as a response to said heartbeat message, the state information indicating an ability of said at least one resource to perform said at least one cluster-specific task;

wherein the transmitting unit also comprises a sending unit, responsive to the

retrieving unit, configured to send the retrieved state information in the heartbeat ~~acknowledgment~~acknowledgement message to the first computer node for the first computer node to; and a storing unit in the first computer node configured to store the state information for managing the computer ~~el~~cluster network,

wherein the examining unit is configured to operate for each heartbeat acknowledgement message to be transmitted to the first computer node, thereby transferring a sequence of the state information within the sequence of heartbeat acknowledgement messages.

9. (Currently Amended) The computer ~~network~~cluster according to claim 8, further comprising a Management Information Base operably connected to the first computer node for storing the state information sent to the first computer node.

10. (Currently Amended) The computer ~~network~~cluster according to claim 9, further comprising an access unit configured to access the Management Information Base from the computer ~~network~~cluster.

11. (Currently Amended) The computer ~~network~~cluster according to claim 9, further comprising an access unit configured to access the Management Information Base from outside of the computer ~~network~~cluster.

12. (Currently Amended) The computer ~~network~~cluster according to claim 11, wherein the access unit comprises a network interface in the first computer node.

13. (Currently Amended) A computer node ~~for a computer cluster, the computer node comprising:~~

at least one resource for performing at least one ~~cluster~~network-specific task;

a receiving unit configured to receive a periodic heartbeat message from another computer node; and

a transmitting unit configured to transmit heartbeat acknowledgement messages to the other computer node as responses to the periodic heartbeat messages, wherein each heartbeat acknowledgement message indicates to indicate to the other node that the computer node is operative within the computer ~~cluster~~network and wherein the heartbeat messages form a sequence of heartbeat acknowledgement messages,

wherein the transmitting unit comprises an examining unit configured to examine whether state information is to be retrieved for a heartbeat acknowledgement message to be transmitted to the other computer node, the heartbeat acknowledgement message belonging to the sequence of heartbeat acknowledgement messages and the state information being indicative of current ability of the at least one resource to perform the at least one network-specific task;

the transmitting unit further comprises a retrieving unit configured to retrieve, upon indication by the examining unit, state information for any one or more of the heartbeat

~~acknowledgment~~acknowledgement message—messages wherein the state information is indicative of an ability of said at least one resource to perform said at least one cluster-specific task; and and a sending unit, responsive to the retrieving unit, configured to send the retrieved state information in any one or more of the heartbeat ~~acknowledgment~~acknowledgement ~~message~~messages to said other computer node,

wherein the examining unit is configured to operate for each heartbeat acknowledgement message to be transmitted to said other computer node, thereby transferring a sequence of the state information within the sequence of heartbeat acknowledgement messages to the other computer node.

14. (Cancelled)

15. (Currently Amended) A method comprising:

transmitting periodic heartbeat messages from a first computer node of a computer ~~elusternetwork~~ to at least one a second computer node of the computer ~~elusternetwork~~, each of the at least the second computer node including at least one resource for performing at least one ~~elusternetwork~~-specific task;

receiving, in the first computer node, awaiting receipt of heartbeat ~~acknowledgment~~acknowledgement messages from the at least one second computer node as a ~~responser~~responses to the heartbeat ~~messages~~message, wherein the ~~heartbeat message is any of the heartbeat messages and the heartbeat~~ acknowledgmentacknowledgement

messages form a sequence of heartbeat acknowledgement messages and wherein each heartbeat acknowledgement message of the sequence~~message~~ indicates to the first computer node that the at least one second computer node is operative within the computer elusternetwork;

examining, in the first computer node, whether a receiving the heartbeat~~acknowledgment~~acknowledgement message comprises including~~state~~ information indicative of current~~an~~ ability of said at least one resource to perform said at least one elusternetwork-specific task, wherein the heartbeat acknowledgement message is any of the heartbeat acknowledgement messages of the sequence; and

storing the state information for managing the computer elusternetwork.

16. (Currently Amended) The method according to claim 15, further comprising storing the state information sent to the first computer node in a Management Information Base.

17. (Currently Amended) The method according to claim 16, further comprising transferring data from the Management Information Base to an entity external to the computer elusternetwork.

18. (Currently Amended) The method according to claim 15, wherein receiving the heartbeat acknowledgment~~acknowledgement~~ message further comprises removing the

second computer node from the ~~cluster~~network when no heartbeat acknowledgement message is received within a predetermined period of time.

19-23. (Cancelled)

24. (Currently Amended) A computer node for a ~~computer cluster~~, the computer node comprising:

a transmitting unit configured to transmit periodic heartbeat messages to at least one a second computer node of the a computer network, ~~cluster~~, each of the at least one the second computer node including at least one resource for performing at least one ~~cluster~~network-specific task;

a receiving unit configured to receive the heartbeat ~~acknowledgment~~acknowledgement messages from the at least one second computer node as responses ~~response~~—to the heartbeat messages, wherein the heartbeat ~~acknowledgment~~acknowledgement messages form a sequence of heartbeat acknowledgement messages and wherein each heartbeat acknowledgement message of the sequence indicates that the ~~indicating that the~~ at least one second computer node is operative within the computer ~~network~~cluster;

an examining unit configured to examine whether ~~when~~ heartbeat acknowledgement ~~message~~messages comprises state information indicative of an current ability of the at least one resource to perform said at least one ~~cluster~~network-specific task,

wherein ~~the heartbeat acknowledgement~~acknowledgement message is any of the heartbeat acknowledgement messages of the sequence; and

a storing unit configured to store the state information for managing the computer ~~cluster~~network.

25. (Currently Amended) A computer ~~network~~cluster comprising:

a plurality of computer nodes; ~~the computer cluster comprising:~~

receiving means for receiving periodic ~~transmitting means for transmitting a~~
heartbeat ~~message~~messages from a first computer node of the computer ~~cluster~~ network
in a second computer node of the computer ~~cluster~~network, the second computer node
including at least one resource for performing at least one ~~cluster~~network-specific task; and

transmission means in the second computer node for transmitting heartbeat
acknowledgement messages to the first computer node as responses to the heartbeat
messages, wherein each heartbeat acknowledgement message indicates to the first computer
node that the second computer node is operative within the computer network and wherein
the heartbeat acknowledgement messages form a sequence of heartbeat acknowledgement
messages.

wherein the transmission means comprises examining means for examining whether
state information is to be retrieved for a heartbeat acknowledgement message to be
transmitted to the first computer node, wherein the heartbeat acknowledgement message
belongs to the sequence of heartbeat acknowledgement messages and wherein the state

information is indicative of current ability of the at least one resource to perform the at least one network-specific task.

~~receiving means for receiving the heartbeat message in the second computer node;~~

wherein the transmission means also comprises retrieving means for retrieving, upon indication by the examination means, state information for thea heartbeat acknowledgmentacknowledgement message to be sent as a response to said heartbeat message, the state information indicating an ability of said at least one resource to perform said at least one cluster-specific task; and sending means, responsive to the retrieving means, for sending the retrieved state information in the heartbeat acknowledgmentacknowledgement message to the first computer node for storage of the state information on the first computer node,

wherein the examining means are configured to operate for each heartbeat acknowledgment message to be transmitted to the first computer node, thereby transferring a sequence of the state information within the sequence of heartbeat acknowledgment messages; and

~~storing means, in the first computer node, for storing the state information.~~

26. (Currently Amended) A computer node ~~for a computer cluster, the computer node~~ comprising:

at least one resource for performing at least one ~~cluster~~network-specific task;

receiving means for receiving periodic heartbeat messages from another computer

node; and

transmission means for transmitting heartbeat acknowledgement messages to the other computer node as responses to the periodic heartbeat messages, wherein each heartbeat acknowledgement message indicates to indicate to the other computer node that the computer node is operative within the a computer cluster network and wherein the heartbeat messages form a sequence of heartbeat acknowledgement messages,

wherein the transmission means comprises examining means for examining whether state information is to be retrieved for a heartbeat acknowledgement message to be transmitted to the other computer node, wherein the heartbeat acknowledgement message belongs to the sequence of heartbeat acknowledgement messages and wherein the state information is indicative of current ability of the at least one resource to perform the at least one network-specific task;

wherein the transmission means also comprises retrieving means for retrieving, upon indicating by the examining means, the state information for any one or more of the heartbeat acknowledgement messages, wherein the state information is indicative of an ability of the at least one resource to perform the at least one cluster-specific task; and sending means, responsive to the ~~second~~ retrieving means, for sending the retrieved state information in ~~any one or more of the heartbeat acknowledgement messages~~ acknowledgement message to said other computer node,

wherein the examining means are configured to operate for each heartbeat acknowledgement message to be transmitted to the other computer node, thereby

transferring a sequence of the state information within the sequence of heartbeat acknowledgment messages.

27. (Currently Amended) A computer node ~~for a computer cluster, the computer~~ node comprising:

transmitting means for transmitting periodic heartbeat messages to at least one second computer node of the a computer elusternetwork, ~~each of the at the least one second~~ computer node including at least one resource for performing at least one elusternetwork-specific task;

reception means for receiving the heartbeat ~~acknowledgment~~acknowledgement messages from the at least one second computer node as responses to the heartbeat messages, wherein the heartbeat ~~acknowledgment~~acknowledgement messages form a sequence of heartbeat acknowledgement messages and wherein each heartbeat acknowledgement message indicates ~~indicating~~ that the ~~at least one second~~ computer node is operative within the computer elusternetwork;

examining means for examining ~~when~~ whether a heartbeat acknowledgement messages comprises state information indicative of ~~an~~current ability of the at least one resource to perform said at least one elusternetwork-specific task, wherein the heartbeat ~~acknowledgment~~acknowledgement message is any of the heartbeat acknowledgement messages of the sequence; and

a-storing means for storing the state information for managing the computer eluster

network.